



## SMALLTALK TO BE USER LANGUAGE OF XANADU™ HYPERTEXT SYSTEM

— Swarthmore, Pa., May, 1980 (Xanadu News Service). The Rosetta™ Smalltalk computer language, available for the Sorcerer™ computer from Exidy, has been chosen as the initial terminal language for the Xanadu Hypertext System. The Xanadu System, a unique back-end digital storage and publishing system, will be coming into operation in 1980 and 1981. User programs, including the Parallel Textface™, will be prepared in Smalltalk using the Sorcerer computer by Project Xanadu staff. Interior modules to use the Sorcerer for such programs will also be made available to cooperating software vendors.

### ELECTRONIC PUBLISHING BEGINS

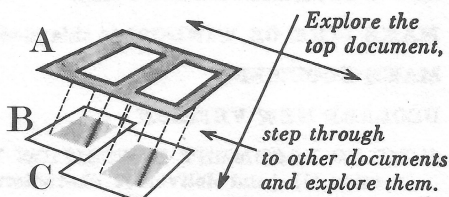
*"Xanadu" is a service and trade mark for computer services and products offered by the undersigned.*

The Xanadu Hypertext System is a new kind of information facility for electronic publishing and document handling. Uniquely simple and uniquely powerful, it is suited to the needs of children, researchers and heads of state alike.

While it is made possible by profound new technical developments, the user has no direct contact with technicalities. They are only the means whereby certain exact and simple services are rapidly performed.

We expect to demonstrate the system in 1980, and begin commercial operation in 1981.

The basic unit of Xanadu Service is the *windowing document*. It may best be thought of as many layers of painted glass, with writing on each.



A document may have a window to another document, and that one to yet another, indefinitely. Thus A contains part of B, and so on.

A reader may either explore the immediate document, or "step through the window" to explore the next document, or the one beyond. After exploring a further document, the reader may return to the one that showed him into it, or proceed on tangents that become available.

By this simple, sweeping mechanism, all manner of different requirements and specialized uses are reduced to a single structure.

#### Examples:

A scholar writes a new interpretation of ancient Greek society, with numerous quotations from the writings of that time. Each quotation is a window, allowing the reader to step through and read the full original.

The annual report of a corporation has a brief paragraph on every division of the company, with summary operating figures for the year. These paragraphs and figures are quoted from other documents which explain the matters more fully; the reader may easily step through to study them further.

A children's story is illustrated with pictures. If the child wants to "reach through the window," each picture is part of a larger picture, with another story attached.

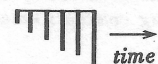
The orderliness and power of this approach provide a basis for both electronic publishing and rationally-ordered document dissemination systems with clear-cut security.

*Publication rule: if the windowing document is electronically published, royalties are paid to the owner of each document seen in proportion to its use.*

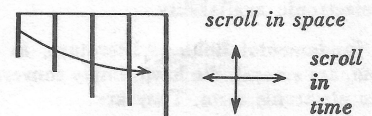
*Security rule: a document can only window documents with the same, or lesser, security level. For instance, a private-document may window a published document, but not vice versa.*

### PRISMATIC\* STORAGE

Ordinary computer files, like paper files, hold their information in only one way. The canonical Xanadu document, however, can store the same material in numerous different versions—as, for example, in the successive drafts of a novel.

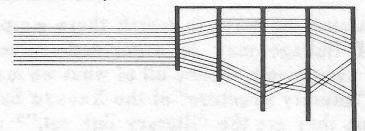


While the user of a customary editing or word processing system may scroll through an individual document, the Xanadu-System user may scroll in time as well as space, watching the changes in a given passage as the system enacts its successive modifications.



Versions of a document set apart for other reasons—"alternative" versions—may likewise be flipped through or efficiently compared side by side.

We call this system of storage Prismatic because we may think of a given part, or section, as being prismatically refracted when we pass from one version to another. Xanadu Prismatic Storage can support virtually instantaneous retrieval of any portion of any version (historical or alternative).



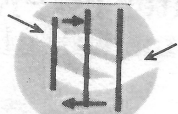
*\*Service and trade mark of the undersigned for file methods and structures employed in Xanadu services.*

## LINKS

Xanadu Prismatic Storage permits the creation of any number of links within and between documents. (The windows of a windowing document are themselves links between documents.)

Essentially, the link seizes a point or span (or any other structure) in the Xanadu Prismatic Document and holds to it. By our unique methods we are able efficiently to store and bring forth all such places and structures, however chosen, at great speed. Links may be refractively followed from a point or span in one version to corresponding places in any other version. Thus a link to one version of a Xanadu Document is a link to all versions.

*forward through versions;*



*backward through versions;  
also "sideways" to alternative versions.*

By means of windowing documents, prismatically stored, you may easily and freely:

*Publish documents electronically.*

*Publish quotations from the work of others,  
since the others get the royalty.*

*Point out the resemblances between any  
two things (by means of links from a  
third document).*

*Make private marginal notes on anything  
published in the library.*

*Point out disagreements, commonalities  
and unifying concepts among the works  
of scholars.*

*Rewrite any document you disagree with—  
and publish it (with the principal  
royalty going to the original author).*

*And so on and so on.*

Some of our basic ideas have come from studying existing paper literature, which is essentially a linked data base, even though it lacks electronic availability.

The fundamental links of literature, as we see them, are several. We have simply converted them to electronic form. They are:

The quotation—now made a window of a windowing document. (We also call this the quote-link.)

The corresponding part. (Just as a marginal note corresponds to what it's beside, or a caption corresponds to its picture, we generalize this link-type to any parts set next to each other.)

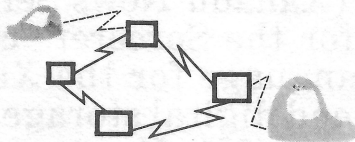
The footnote (or jump-link) provides side-long opportunities to the reader presented by an author or commentator.

The fascinating ways in which these simple forms of linkage may be combined—successively or recursively—define all of what we may call the "literary structure" of the Xanadu System. Thus they are the "literary link set,"\* or Lit-Set\* for short. Other link types may be created for any purpose; however, the Lit-Set transcends, and permits intercomparison of, all other links and contents.

## OUR VISION

It is our unusual hope that this, with its simplicity of approach and efficiency of implementation, may become the standard publishing medium of the future.

We do not foresee this material being kept in "centralized data banks." Rather, it can be more efficiently dispersed among holding stations united by a communication network.



A user connected to any node may demand, and get instantly or rapidly, any document—however widely scattered its parts may be in their storage and ownership.

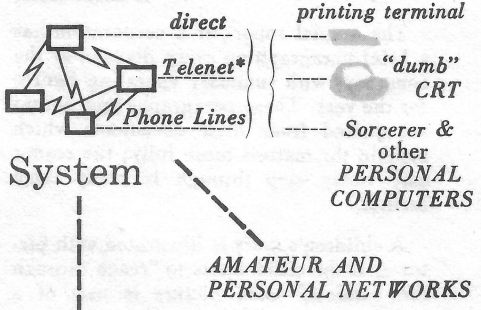
The structure of documents and links described here is, for a computer system, refreshingly simple. That's all there is; we have described it completely. We regard the simplicity of this design as its greatest virtue.

However, to make it work efficiently—so that documents can be delivered in seconds, even as the data base grows to enormous size—is another matter.

To do efficiently what has been described in this leaflet, we have had to overthrow all conventions and conventional assumptions about data handling and indexing, building from the bottom up a system that can grow indefinitely without choking on retrieval and transmission bottlenecks. We believe we have achieved this in our unique proprietary software.

A user of the Xanadu system should properly communicate with it through a programmable computer or terminal of some power.

## Xanadu



PROFESSIONAL AND  
SPECIAL NETWORKS; DATA BANKS

Because of the rich variety of uses of the system, for text, graphics, music, scientific data and on and on, in many different styles, we wish to extend our heartfelt cooperation to vendors of Xanadu-compatible programs and products. Detailed specifications for interface protocols and software will be released from time to time. Some of our trademarks and suggested designs will be made available on a reasonable basis for such products.

We are interested also in hooking up to ethical vendors of on-line information services, whereby they may provide windows to our service as part of theirs. We are also willing to discuss the enhancement of other on-line services through ours, and to talk to corporate customers about adaptation of our services to their in-house use.

Further information will be released later in 1980, including technical specifications, arrangements for reserving user accounts and user names, and details of our franchise package (if ready). To get on our mailing list, contact:

**Ted Nelson, Director  
Project Xanadu  
Box 128  
Swarthmore, PA 19081**

## TEST YOUR UNDERSTANDING

The fundamental concepts of the Xanadu System are unlike those of any other service. They are these:

- Windowing Document
- Text Scroll, Time Scroll, Version Flip
- Prismatic Storage and Linkage
- Link Types
- Lit-Set
- On-Line Royalty  
(of an On-Line Document)
- Official Front End

## KEY VIRTUAL COMMANDS OF USER ENVIRONMENT.

(Note that these concepts can apply not merely to text, but to graphics, music, films, etc. The front-end device figures prominently in effecting some of these.)

Brackets [ ] indicate options.

**SCROLL Fwd/Back X chars**  
[or in dimensions A, B, C . . .]

**FLIP TO VERSION X**  
[holding position Y in material]

**INSERT**

**DELETE**

**REARRANGE**

**FOLLOW LINK [of type X]**

**SHOW CORRESPONDING PART**

**MAKE LINK OR WINDOW to this place**

**MAKE DOCUMENT**

**DECLARE NEW VERSION**

**JUMP TO DOCUMENT X, POSITION Y,**  
[version Z] [and deliver N characters]

**SHOW LINKS TO THIS [PART OF] DOCUMENT**  
[seived on time/space/author]

**MAKE DIRECTORY**

**FOLLOW THROUGH DIRECTORY**  
to specified document

**CHANGE SECURITY LEVEL**  
(Note: users are urged to provide their own encryption.)

**PUBLISH.** (Requires formal signature.)

\*Service and trade mark.

\*Trade mark of GTE Telenet, Inc.